REMARKS

Claims 1-20 are now pending in the application. Claims 11 – 13 are withdrawn, without prejudice, as drawn to a non-elected invention. Claims 1, 5, and 7 – 10 stand rejected under 35 U.S.C. § 102(e) as being unpatentable over United States Patent 6,524,690 to Dyksterhouse ("Dyksterhouse"); Claims 2 – 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of United States Patent 5, 789,073 to Odagiri et al. ("Odagiri"); Claims 6 and 15 – 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of United States Patent 4,374,170 to Fesko ("Fesko"); Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of Fesko and United States Patent 4,451,528 to Krause ("Krause"); and Claims 14 and 17-19 are also rejected on the same basis as Claims 6 and 15 - 16. In this Response, independent Claims 1 and 14 have been amended to respectfully traverse the rejections of these Claims and, by dependence, the rejections of Claims 2 – 10 and 15 – 20. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

SPECIFICATION

Applicants have amended the Specification to correct two typographical errors and a grammatical error in the second sentence of paragraph [0026] and thereby conform the second sentence to the remainder of the paragraph. No new matter is entered into the specification. Therefore, entry of these minor amendments is respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 5, and 7 – 10 stand rejected under 35 U.S.C. § 102(e) as being unpatentable over United States Patent 6,524,690 to Dyksterhouse ("Dyksterhouse"). This rejection is respectfully traversed.

Independent Claims 1 and 14 have been amended to provide that (a) the coil of laminate material defines a periphery for a load-bearing portion of the composite, and (b) each continuous reinforcement fiber forms at least one complete loop circumscribing the periphery so that a plurality of generally parallel loops respective to the plurality of continuous reinforcement fibers is disposed within the composite.

Support in the specification for the amendments to Claim 1 and Claim 14 is respectfully noted, for example, in the specification on page 4 in paragraph 0016 at lines 6 and 7 with "...each component contains very large loops of continuous fibers which are incorporated into the load bearing portions of the structure"; at page 6 in paragraph 0020 at lines 8 to 10 with "After being cured and shaped by the mold, these large loops will become the load bearing portions of the assembly"; at page 2 in paragraph 0006 at lines 13 and 14 with "Forming a loop structure with the coated glass fibers wherein the fibers are generally parallel"; and at page 7 in paragraph 0021 at lines 2 to 5 with "Shown is a spanner bar 40, which is designed to take a compressive as well as tensile loads. The spanner bar 40 has a plurality of continuous fiber laminate layers 24 generally surrounding the periphery 42 of the structure."

Dyksterhouse is directed to the concept of heating the reinforcing material before it is impregnated with resin. Dyksterhouse states at column 7 line 54 that: "Continuous directional fibers may be formed by compression molding, filament winding, pultrusion,

or combinations of these processes." Dyksterhouse further states at column 8 line 65 that: "The impregnated tow is wrapped onto a flat 2-bar rotating creel 22. Forty-nine wraps, 2 in. wide, are made on the creel. The wound creel is then place into a pre-heated tool at 480.degree. F. and 200 psi for 8 minutes." But Dyksterhouse appears to only suggest one fiber and does not appear to teach or suggest the use of a plurality of separate and independent continuous reinforcement fibers.

Insofar as the cited reference does not appear to suggest the invention of Claim 1, as amended, Applicants believe that independent Claim 1 and, by dependence, Claims 5 and 7 – 10 are now distinguished from the prior art, and that, accordingly, the rejections under 35 U.S.C. § 102(e) should be withdrawn. Consideration and action in that regard is respectfully solicited.

REJECTION UNDER 35 U.S.C. § 103

Claims 2 – 4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of United States Patent 5, 789,073 to Odagiri et al. ("Odagiri"); Claims 6 and 15 – 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of United States Patent 4,374,170 to Fesko ("Fesko"); Claim 20 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Dyksterhouse in view of Fesko and United States Patent 4,451,528 to Krause ("Krause"); and Claims 14 and 17-19 are also rejected on the same basis as Claims 6 and 15 - 16. These rejections are respectfully traversed.

Reference is respectfully drawn to the discussion of amendments and Dyksterhouse in remarks directed to the 35 U.S.C. § 102(e) rejection.

Odagiri is directed to positional separation of the fibers within the resin. Odagiri references at column 2 line 25: "...a laminated composite material, comprising (A) long reinforcing fibers; (B) a matrix resin mixed with said long reinforcing fibers; and (C1) a resin forming a phase separate from said matrix resin, wherein 90% or more of said resin (C1) is localized in inter-layer zones or a laminated composite material, comprising (A) long reinforcing fibers; (B) a matrix resin mixed with said long reinforcing fibers; and (C1) a resin forming a phase separate from said matrix resin localized in inter-layer zones, wherein the border length factor of component (C1) in the inter-layer zones is 2.5 or more." Odagiri further states at column 2 line 45: "...reinforcing fibers within each layer being arranged in a single direction..." as perhaps some anticipation of reinforcing fibers of the present invention being generally parallel. Odagiri further references at column 3 line 45: "The form or arrangement of the reinforcing fibers is not restricted. For example, fibers arranged in single direction or a random direction can be used. Fibers in the form of a sheet, a mat, a woven fabric and braided ropes can also be used. For applications requiring high specific gravity and high specific elastic modulus, reinforcing fibers aligned in one direction are the most suitable, but fibers arranged like cloth (woven fabric) which are easy to handle are also suitable ... . In a multilayer laminate a majority of the layers may have parallel fibers arranged in one direction and the remaining layers may have parallel fibers arranged in a direction perpendicular thereto." Odagiri further references 15 Examples which all teach "sheet laminate" or "plate". But Odagiri appears to only suggest non-coiled arrangements of the fibers and does not appear to teach or suggest the use of a coil in which each of a plurality of reinforcement fibers form a loop.

Krause is directed to multiple sheet composites. Krause references at column 4 line 18: "The carbon or graphite fibers in the molding compound are preferably in the form of continuous filaments or yarns and may be woven or unidirectionally oriented to achieve the desired strength properties. Preferably, the graphite fibers are in the form of continuous filaments uni-directionally oriented and are applied to the glass fiber molding compound such that the fiber orientation is in the direction of maximum anticipated stress to which the molded article is to be subjected during ultimate service." Krause further references at column 6 line 43: "As shown in FIG. 6, a leaf spring which has been exaggerated in thickness for the purposes of clarity is indicated at 56 formed with eyes 58 at the ends thereof and wherein the principal section is comprised of a glass fiber containing molding compound. To provide for reinforcement in high stress areas, a graphite fiber stratum or layer 60 with the fibers oriented uni-directionally parallel to the longitudinal axis of the leaf spring is provided in the central upper section thereof. Similarly, the eye sections 58 at the ends of the spring are further reinforced by graphite fiber layers 62." But an examination of element 58 in FIG. 6 shows that a coil with a complete loop is not provided. Krause therefore appears to only suggest non-coiled arrangements of the fibers and does not appear to teach or suggest the use of a coil in which each of a plurality of reinforcement fibers form a loop circumscribing a load-support periphery. Indeed, in this regard, Krause arguably implicitly teaches away from the present invention insofar as the load-supporting part of element 58 (the circular wall defining the inside diameter of the attachment eye) is not shown as being circumferentially directly reinforced with fiber!

Fesko addresses use of two complimentary resins in composites. Fesko references at column 1 line 30: "The impregnated roving can then be wound, layer upon layer, onto a mandrel having suitable configuration to provide a preform of the desired product. The preform can then be cured by application of heat (and possibly pressure) over a period of time to yield the desired product." Fesko further references at column 4 line 52: "According to another aspect of the invention, a novel method of making a structural preform of a device, a laminate or the like (hereinafter, collectively, a "structural preform") comprises amassing arrays of resin impregnated filaments (A) and (B), as described above, and suitably forming or mounting the resulting amassment such as, for example, by winding the amassment in a multitude of layers on a mandrel having configuration suitable to form the desired structural preform." This is further described in EXAMPLE IV at column 11 line 17 with: "The following example is directed to the manufacture of a leaf for a multi-leaf vehicular leaf spring. A mandrel was provided, around which resin impregnated glass roving could be wound to form the desired resin and glass preform. Heating means for the surface of the mandrel optionally provide an elevated temperature during the curing period. The mandrel surface had such configuration that three spring leafs were formed simultaneously around the surface thereof. (After cure of the resin pre-form, the individual leaf springs are cut at appropriate locations in the otherwise continuous fiber reinforced cured plastic to produce the three spring leafs)." The cutting of the wound perform into the three leaf springs clearly shows that Fesko teaches away from the present invention's use of a coiled plurality of generally parallel loops respective to a plurality of continuous reinforcement fibers to provide a load bearing portion within the composite product.

Insofar as the cited references either (a) do not appear to suggest the invention of Claims 1 or 14 as amended or (b) teach away from the invention of Claims 1 or 14 as amended, Applicants believe that, in dependence to the amended independent claims, Claims 2 – 4 are now patentably distinguished over Dyksterhouse in view of Odagiri, Claims 6 and 15 – 16 are now patentably distinguished over Dyksterhouse in view of Fesko, Claim 20 is now patentably distinguished over Dyksterhouse in view of Fesko and Krause, and Claims 14 and 17 -19 are now also patentably distinguished over Dyksterhouse in view of Fesko, and that, accordingly, the respective rejections under 35 U.S.C. § 103(a) should be withdrawn. Consideration and action in that regard is respectfully solicited.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office

Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1243.

Respectfully submitted,

Dated: 09 15-2003

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